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| DESCRIPTION: | | |
| <p>(1) Provides additional PRN sequences of P-, C/A-, L2 CL-, and L2 CM-code in Section 6 as information.</p> | | |
| <p>The following sheets are updated and/or added by this IRN:</p> <p>Sheets: i, iii, v, vii – xi, xiv – xvi, 6, 18, 56a – 56l</p> | | |
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NAVSTAR GLOBAL POSITIONING SYSTEM

INTERFACE SPECIFICATION

IS-GPS-200

Revision D

IRN-200D-001

7 March 2006

Navstar GPS Space Segment/Navigation User Interfaces

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3.2.1.1 P-Code. The PRN P-code for SV ID number i is a ranging code, $P_i(t)$, of 7 days in length at a chipping rate of 10.23 Mbps. The 7 day sequence is the modulo-2 sum of two sub-sequences referred to as X_1 and X_{2i} ; their lengths are 15,345,000 chips and 15,345,037 chips, respectively. The X_{2i} sequence is an X2 sequence selectively delayed by 1 to 37 chips thereby allowing the basic code generation technique to produce a set of 37 mutually exclusive P-code sequences of 7 days in length. Of these, 32 are designated for use by SVs and 5 are reserved for other purposes (e.g. ground transmitters, etc.). Assignment of these code phase segments by SV-ID number (or other use) is given in Table 3-I. [Additional PRN P-code sequences with assigned PRN numbers are provided in Section 6.3.5.2, Table 6-I](#)

3.2.1.2 Y-Code. The PRN Y-code is used in place of the P-code when the A-S mode of operation is activated.

3.2.1.3 C/A-Code. The PRN C/A-Code for SV ID number i is a Gold code, $G_i(t)$, of 1 millisecond in length at a chipping rate of 1023 Kbps. The $G_i(t)$ sequence is a linear pattern generated by the modulo-2 addition of two sub-sequences, G_1 and G_{2i} , each of which is a 1023 chip long linear pattern. The epochs of the Gold code are synchronized with the X_1 epochs of the P-code. As shown in Table 3-I, the G_{2i} sequence is a G_2 sequence selectively delayed by pre-assigned number of chips, thereby generating a set of different C/A-codes. Assignment of these by GPS PRN signal number is given in Table 3-I. [Additional PRN C/A-code sequences with assigned PRN numbers are provided in Section 6.3.5.1, Table 6-I](#)

3.2.1.4 L2 CM-Code (IIR-M, IIF, and subsequent blocks). The PRN L2 CM-code for SV ID number i is a ranging code, $C_{M,i}(t)$, which is 20 milliseconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CM-code are synchronized with the X_1 epochs of the P-code. The $C_{M,i}(t)$ sequence is a linear pattern which is short cycled every count of 10230 chips by resetting with a specified initial state. Assignment of initial states by GPS PRN signal number is given in Table 3-II. [Additional PRN L2 CM-code sequence pairs are provided in Section 6.3.5.3, Table 6-II](#)

3.2.1.5 L2 CL-Code (IIR-M, IIF, and subsequent blocks). The PRN L2 CL-code for SV ID number i is a ranging code, $C_{L,i}(t)$, which is 1.5 seconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CL-code are synchronized with the X_1 epochs of the P-code. The $C_{L,i}(t)$ sequence is a linear pattern which is generated using the same code generator polynomial as the one used for $C_{M,i}(t)$. However, the $C_{L,i}(t)$ sequence is short cycled by resetting with a specified initial state every code count of 767250 chips. Assignment of initial states by GPS PRN signal number is given in Table 3-II. [Additional PRN L2 CL-code sequence pairs are provided in Section 6.3.5.3, Table 6-II](#)

3.3.2 PRN Code Characteristics. The characteristics of the P-, L2 CM-, L2 CL-, and the C/A-codes are defined below in terms of their structure and the basic method used for generating them. Figure 3-1 depicts a simplified block diagram of the scheme for generating the 10.23 Mbps $P_i(t)$ and the 1.023 Mbps $G_i(t)$ patterns (referred to as P- and C/A-codes respectively), and for modulo-2 summing these patterns with the NAV bit train, $D(t)$, which is clocked at 50 bps. The resultant composite bit trains are then used to modulate the signal carriers.

3.3.2.1 Code Structure. The $P_i(t)$ pattern (P-code) is generated by the modulo-2 summation of two PRN codes, $X_1(t)$ and $X_2(t - iT)$, where T is the period of one P-code chip and equals $(1.023 \times 10^7)^{-1}$ seconds, while i is an integer from 1 through 37. This allows the generation of 37 unique $P(t)$ code phases (identified in Table 3-I) using the same basic code generator.

The linear $G_i(t)$ pattern (C/A-code) is the modulo-2 sum of two 1023-bit linear patterns, G_1 and G_2 . The latter sequence is selectively delayed by an integer number of chips to produce many different $G(t)$ patterns (defined in Table 3-I).

The $C_{M,i}(t)$ pattern (L2 CM-code) is a linear pattern which is reset with a specified initial state every code count of 10230 chips. Different initial states are used to generate different $C_{M,i}(t)$ patterns (defined in Table 3-II).

The $C_{L,i}(t)$ pattern (L2 CL-code) is also a linear pattern but with a longer reset period of 767250 chips. Different initial states are used to generate different $C_{L,i}(t)$ patterns (defined in Table 3-II).

For a given SV-ID, two different initial states are used to generate different $C_{L,i}(t)$ and $C_{M,i}(t)$ patterns.

Section 6.3.5 provides a selected subset of additional P-, L2 CM-, L2 CL-, and the C/A-code sequences with assigned PRN numbers.

6.3.5 PRN Code sequences expansion. The additional PRN sequences provided in this section are for information only. The additional PRN sequences identified in this section are not applicable to Block II/IIA, IIR/IIR-M, IIF SVs. In addition, the current valid range for GPS PRN signal number for C/A- and P-code is 1 – 37 as specified in Table 3-I. The PRN sequences provided in this section are for other L1/L2 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, and potential use in the future by GPS.

6.3.5.1 Additional C/A-code PRN sequences. The PRN C/A-code is described in Section 3.2.1.3 and 36 legacy C/A-code sequences are assigned by SV-ID number in Table 3-I. An additional set of 173 C/A-code PRN sequences are selected and assigned with PRN numbers in this section as shown in Table 6-I. Among the 173 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future Ground Based Augmentation System (GBAS) and other augmentation systems; PRN numbers 120 through 158 are reserved for SBAS; and PRN numbers 159 through 210 are reserved for other Global Navigation Satellite System (GNSS) applications. For GPS application, the CNAV data, $D_c(t)$, will be modulo-2 added to the C/A-code sequences of PRN numbers 38 through 63. Any assignment of a C/A-code PRN number and its code sequence for any additional SV and/or other L1/L2 signal applications, such as SBAS satellite signals, will be selected from the sequences of Table 6-I and will be approved, controlled, and managed by the GPS JPO.

It should be noted that, in Table 6-I, the C/A-code sequences are identified by “G2 Delay” and “Initial G2 Setting” which is not as same as the method used in Table 3-I. The two-tap coder implementation method referenced and used in Table 3-I is not used in Table 6-I due to its limitation in generating C/A-code sequences. The “G2 Delay” specified in Table 6-I may be accomplished by using the “Initial G2 Setting” as the initialization vector for the G2 shift register of Figure 3-9.

6.3.5.2 Additional P-Code PRN sequences. The PRN P-code set of 37 mutually exclusive sequences are described in Section 3.2.1.1, and assignment of these code segments by SV-ID number is given in Table 3-I. An additional set of 173 P-code PRN sequences are described in this section. Among the 173 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future GBAS and other augmentation systems; and PRN numbers 120 through 210 are reserved for other future applications. For GPS application, the CNAV data, $D_c(t)$, which may include additional future military message types, will be modulo-2 added to the P-code sequences of PRN numbers 38 through 63. The P-code PRN numbers and their code sequences defined in Table 6-I are not for general use and will be approved, controlled, and managed by the GPS JPO.

6.3.5.2.1 Additional P-code Generation. The generation of 37 mutually exclusive P-code PRN sequences are described in Section 3.3.2.2. The additional set of 173 P-code PRN sequences are generated by circularly shifting each of the original 37 sequences (over one week) by an amount corresponding to 1, 2, 3, 4, or 5 days. The additional sequences are therefore time shifted (i.e. offset) versions of the original 37 sequences. These offset P-code PRN sequences, $P_i(t)$, are described as follows:

$$P_i(t) = P_{i-37x}(t - xT),$$

where i is an integer from 38 to 210, x is an integer portion of $(i-1)/37$, and T is defined to equal 24 hours.

As an example, P-code sequence for PRN 38 would be the same sequence as PRN 1 shifted 24 hours into a week (i.e. 1st chip of PRN 38 at beginning of week is the same chip for PRN 1 at 24 hours after beginning of week). The complete list of the additional P-code PRN assignment is shown in Table 6-I. Any assignment of a P-code PRN number and its code sequence for any additional SV and/or other L1/L2 signal applications will be selected from the sequences of Table 6-I.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 1 of 6)

| PRN Signal No. * | C/A | | | P | | |
|------------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 38 | 67 | 0017 | 1760 | 1 | P ₁ (t-24) | 3373 |
| 39 | 103 | 0541 | 1236 | 2 | P ₂ (t-24) | 3757 |
| 40 | 91 | 1714 | 0063 | 3 | P ₃ (t-24) | 3545 |
| 41 | 19 | 1151 | 0626 | 4 | P ₄ (t-24) | 5440 |
| 42 | 679 | 1651 | 0126 | 5 | P ₅ (t-24) | 4402 |
| 43 | 225 | 0103 | 1674 | 6 | P ₆ (t-24) | 4023 |
| 44 | 625 | 0543 | 1234 | 7 | P ₇ (t-24) | 4233 |
| 45 | 946 | 1506 | 0271 | 8 | P ₈ (t-24) | 2337 |
| 46 | 638 | 1065 | 0712 | 9 | P ₉ (t-24) | 3375 |
| 47 | 161 | 1564 | 0213 | 10 | P ₁₀ (t-24) | 3754 |
| 48 | 1001 | 1365 | 0412 | 11 | P ₁₁ (t-24) | 3544 |
| 49 | 554 | 1541 | 0236 | 12 | P ₁₂ (t-24) | 3440 |
| 50 | 280 | 1327 | 0450 | 13 | P ₁₃ (t-24) | 5402 |
| 51 | 710 | 1716 | 0061 | 14 | P ₁₄ (t-24) | 2423 |
| 52 | 709 | 1635 | 0142 | 15 | P ₁₅ (t-24) | 5033 |
| 53 | 775 | 1002 | 0775 | 16 | P ₁₆ (t-24) | 2637 |
| 54 | 864 | 1015 | 0762 | 17 | P ₁₇ (t-24) | 3135 |
| 55 | 558 | 1666 | 0111 | 18 | P ₁₈ (t-24) | 5674 |
| 56 | 220 | 0177 | 1600 | 19 | P ₁₉ (t-24) | 4514 |
| 57 | 397 | 1353 | 0424 | 20 | P ₂₀ (t-24) | 2064 |
| 58 | 55 | 0426 | 1351 | 21 | P ₂₁ (t-24) | 5210 |
| 59 | 898 | 0227 | 1550 | 22 | P ₂₂ (t-24) | 2726 |
| 60 | 759 | 0506 | 1271 | 23 | P ₂₃ (t-24) | 5171 |
| 61 | 367 | 0336 | 1441 | 24 | P ₂₄ (t-24) | 2656 |
| 62 | 299 | 1333 | 0444 | 25 | P ₂₅ (t-24) | 5105 |
| 63 | 1018 | 1745 | 0032 | 26 | P ₂₆ (t-24) | 2660 |

* PRN sequences 38 through 63 are reserved for GPS.

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000).

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 2 of 6)

| PRN Signal No. | C/A | | | P | | |
|----------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 64 | 729 | 0254 | 1523 | 27 | P ₂₇ (t-24) | 5112 |
| 65 | 695 | 1602 | 0175 | 28 | P ₂₈ (t-24) | 4667 |
| 66 | 780 | 1160 | 0617 | 29 | P ₂₉ (t-24) | 2111 |
| 67 | 801 | 1114 | 0663 | 30 | P ₃₀ (t-24) | 5266 |
| 68 | 788 | 1342 | 0435 | 31 | P ₃₁ (t-24) | 4711 |
| 69 | 732 | 0025 | 1752 | 32 | P ₃₂ (t-24) | 4166 |
| 70 | 34 | 1523 | 0254 | 33 | P ₃₃ (t-24) | 2251 |
| 71 | 320 | 1046 | 0731 | 34 | P ₃₄ (t-24) | 5306 |
| 72 | 327 | 0404 | 1373 | 35 | P ₃₅ (t-24) | 4761 |
| 73 | 389 | 1445 | 0332 | 36 | P ₃₆ (t-24) | 2152 |
| 74 | 407 | 1054 | 0723 | 37 | P ₃₇ (t-24) | 5247 |
| 75 | 525 | 0072 | 1705 | 1 | P ₁ (t-48) | 5736 |
| 76 | 405 | 0262 | 1515 | 2 | P ₂ (t-48) | 2575 |
| 77 | 221 | 0077 | 1700 | 3 | P ₃ (t-48) | 3054 |
| 78 | 761 | 0521 | 1256 | 4 | P ₄ (t-48) | 3604 |
| 79 | 260 | 1400 | 0377 | 5 | P ₅ (t-48) | 3520 |
| 80 | 326 | 1010 | 0767 | 6 | P ₆ (t-48) | 5472 |
| 81 | 955 | 1441 | 0336 | 7 | P ₇ (t-48) | 4417 |
| 82 | 653 | 0365 | 1412 | 8 | P ₈ (t-48) | 2025 |
| 83 | 699 | 0270 | 1507 | 9 | P ₉ (t-48) | 3230 |
| 84 | 422 | 0263 | 1514 | 10 | P ₁₀ (t-48) | 5736 |
| 85 | 188 | 0613 | 1164 | 11 | P ₁₁ (t-48) | 4575 |
| 86 | 438 | 0277 | 1500 | 12 | P ₁₂ (t-48) | 2054 |
| 87 | 959 | 1562 | 0215 | 13 | P ₁₃ (t-48) | 3204 |
| 88 | 539 | 1674 | 0103 | 14 | P ₁₄ (t-48) | 3720 |
| 89 | 879 | 1113 | 0664 | 15 | P ₁₅ (t-48) | 5572 |
| 90 | 677 | 1245 | 0532 | 16 | P ₁₆ (t-48) | 4457 |
| 91 | 586 | 0606 | 1171 | 17 | P ₁₇ (t-48) | 4005 |
| 92 | 153 | 0136 | 1641 | 18 | P ₁₈ (t-48) | 2220 |
| 93 | 792 | 0256 | 1521 | 19 | P ₁₉ (t-48) | 3332 |
| 94 | 814 | 1550 | 0227 | 20 | P ₂₀ (t-48) | 3777 |
| 95 | 446 | 1234 | 0543 | 21 | P ₂₁ (t-48) | 3555 |

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 3 of 6)

| PRN Signal No. | C/A | | | P | | |
|----------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 96 | 264 | 0260 | 1517 | 22 | P ₂₂ (t-48) | 3444 |
| 97 | 1015 | 1455 | 0322 | 23 | P ₂₃ (t-48) | 3400 |
| 98 | 278 | 1535 | 0242 | 24 | P ₂₄ (t-48) | 5422 |
| 99 | 536 | 0746 | 1031 | 25 | P ₂₅ (t-48) | 2433 |
| 100 | 819 | 1033 | 0744 | 26 | P ₂₆ (t-48) | 3037 |
| 101 | 156 | 1213 | 0564 | 27 | P ₂₇ (t-48) | 5635 |
| 102 | 957 | 0710 | 1067 | 28 | P ₂₈ (t-48) | 2534 |
| 103 | 159 | 0721 | 1056 | 29 | P ₂₉ (t-48) | 5074 |
| 104 | 712 | 1763 | 0014 | 30 | P ₃₀ (t-48) | 4614 |
| 105 | 885 | 1751 | 0026 | 31 | P ₃₁ (t-48) | 2124 |
| 106 | 461 | 0435 | 1342 | 32 | P ₃₂ (t-48) | 5270 |
| 107 | 248 | 0735 | 1042 | 33 | P ₃₃ (t-48) | 2716 |
| 108 | 713 | 0771 | 1006 | 34 | P ₃₄ (t-48) | 5165 |
| 109 | 126 | 0140 | 1637 | 35 | P ₃₅ (t-48) | 4650 |
| 110 | 807 | 0111 | 1666 | 36 | P ₃₆ (t-48) | 2106 |
| 111 | 279 | 0656 | 1121 | 37 | P ₃₇ (t-48) | 5261 |
| 112 | 122 | 1016 | 0761 | 1 | P ₁ (t-72) | 2752 |
| 113 | 197 | 0462 | 1315 | 2 | P ₂ (t-72) | 5147 |
| 114 | 693 | 1011 | 0766 | 3 | P ₃ (t-72) | 4641 |
| 115 | 632 | 0552 | 1225 | 4 | P ₄ (t-72) | 2102 |
| 116 | 771 | 0045 | 1732 | 5 | P ₅ (t-72) | 5263 |
| 117 | 467 | 1104 | 0673 | 6 | P ₆ (t-72) | 2713 |
| 118 | 647 | 0557 | 1220 | 7 | P ₇ (t-72) | 3167 |
| 119 | 203 | 0364 | 1413 | 8 | P ₈ (t-72) | 3651 |
| 120 | 145 | 1106 | 0671 | 9 | P ₉ (t-72) | 3506 |
| 121 | 175 | 1241 | 0536 | 10 | P ₁₀ (t-72) | 5461 |
| 122 | 52 | 0267 | 1510 | 11 | P ₁₁ (t-72) | 4412 |
| 123 | 21 | 0232 | 1545 | 12 | P ₁₂ (t-72) | 2027 |
| 124 | 237 | 1617 | 0160 | 13 | P ₁₃ (t-72) | 5231 |
| 125 | 235 | 1076 | 0701 | 14 | P ₁₄ (t-72) | 2736 |

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 4 of 6)

| PRN Signal No. | C/A | | | P | | |
|----------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 126 | 886 | 1764 | 0013 | 15 | P ₁₅ (t-72) | 3175 |
| 127 | 657 | 0717 | 1060 | 16 | P ₁₆ (t-72) | 5654 |
| 128 | 634 | 1532 | 0245 | 17 | P ₁₇ (t-72) | 2504 |
| 129 | 762 | 1250 | 0527 | 18 | P ₁₈ (t-72) | 5060 |
| 130 | 355 | 0341 | 1436 | 19 | P ₁₉ (t-72) | 2612 |
| 131 | 1012 | 0551 | 1226 | 20 | P ₂₀ (t-72) | 3127 |
| 132 | 176 | 0520 | 1257 | 21 | P ₂₁ (t-72) | 5671 |
| 133 | 603 | 1731 | 0046 | 22 | P ₂₂ (t-72) | 4516 |
| 134 | 130 | 0706 | 1071 | 23 | P ₂₃ (t-72) | 4065 |
| 135 | 359 | 1216 | 0561 | 24 | P ₂₄ (t-72) | 4210 |
| 136 | 595 | 0740 | 1037 | 25 | P ₂₅ (t-72) | 4326 |
| 137 | 68 | 1007 | 0770 | 26 | P ₂₆ (t-72) | 4371 |
| 138 | 386 | 0450 | 1327 | 27 | P ₂₇ (t-72) | 2356 |
| 139 | 797 | 0305 | 1472 | 28 | P ₂₈ (t-72) | 5345 |
| 140 | 456 | 1653 | 0124 | 29 | P ₂₉ (t-72) | 4740 |
| 141 | 499 | 1411 | 0366 | 30 | P ₃₀ (t-72) | 2142 |
| 142 | 883 | 1644 | 0133 | 31 | P ₃₁ (t-72) | 5243 |
| 143 | 307 | 1312 | 0465 | 32 | P ₃₂ (t-72) | 2703 |
| 144 | 127 | 1060 | 0717 | 33 | P ₃₃ (t-72) | 5163 |
| 145 | 211 | 1560 | 0217 | 34 | P ₃₄ (t-72) | 4653 |
| 146 | 121 | 0035 | 1742 | 35 | P ₃₅ (t-72) | 4107 |
| 147 | 118 | 0355 | 1422 | 36 | P ₃₆ (t-72) | 4261 |
| 148 | 163 | 0335 | 1442 | 37 | P ₃₇ (t-72) | 4312 |
| 149 | 628 | 1254 | 0523 | 1 | P ₁ (t-96) | 2525 |
| 150 | 853 | 1041 | 0736 | 2 | P ₂ (t-96) | 3070 |
| 151 | 484 | 0142 | 1635 | 3 | P ₃ (t-96) | 5616 |
| 152 | 289 | 1641 | 0136 | 4 | P ₄ (t-96) | 2525 |
| 153 | 811 | 1504 | 0273 | 5 | P ₅ (t-96) | 3070 |
| 154 | 202 | 0751 | 1026 | 6 | P ₆ (t-96) | 3616 |
| 155 | 1021 | 1774 | 0003 | 7 | P ₇ (t-96) | 3525 |

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 5 of 6)

| PRN Signal No. | C/A | | | P | | |
|----------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 156 | 463 | 0107 | 1670 | 8 | P ₈ (t-96) | 5470 |
| 157 | 568 | 1153 | 0624 | 9 | P ₉ (t-96) | 4416 |
| 158 | 904 | 1542 | 0235 | 10 | P ₁₀ (t-96) | 4025 |
| 159 | 670 | 1223 | 0554 | 11 | P ₁₁ (t-96) | 4230 |
| 160 | 230 | 1702 | 0075 | 12 | P ₁₂ (t-96) | 4336 |
| 161 | 911 | 0436 | 1341 | 13 | P ₁₃ (t-96) | 2375 |
| 162 | 684 | 1735 | 0042 | 14 | P ₁₄ (t-96) | 5354 |
| 163 | 309 | 1662 | 0115 | 15 | P ₁₅ (t-96) | 2744 |
| 164 | 644 | 1570 | 0207 | 16 | P ₁₆ (t-96) | 5140 |
| 165 | 932 | 1573 | 0204 | 17 | P ₁₇ (t-96) | 4642 |
| 166 | 12 | 0201 | 1576 | 18 | P ₁₈ (t-96) | 4103 |
| 167 | 314 | 0635 | 1142 | 19 | P ₁₉ (t-96) | 2263 |
| 168 | 891 | 1737 | 0040 | 20 | P ₂₀ (t-96) | 5313 |
| 169 | 212 | 1670 | 0107 | 21 | P ₂₁ (t-96) | 2767 |
| 170 | 185 | 0134 | 1643 | 22 | P ₂₂ (t-96) | 5151 |
| 171 | 675 | 1224 | 0553 | 23 | P ₂₃ (t-96) | 2646 |
| 172 | 503 | 1460 | 0317 | 24 | P ₂₄ (t-96) | 3101 |
| 173 | 150 | 1362 | 0415 | 25 | P ₂₅ (t-96) | 5662 |
| 174 | 395 | 1654 | 0123 | 26 | P ₂₆ (t-96) | 4513 |
| 175 | 345 | 0510 | 1267 | 27 | P ₂₇ (t-96) | 2067 |
| 176 | 846 | 0242 | 1535 | 28 | P ₂₈ (t-96) | 3211 |
| 177 | 798 | 1142 | 0635 | 29 | P ₂₉ (t-96) | 3726 |
| 178 | 992 | 1017 | 0760 | 30 | P ₃₀ (t-96) | 3571 |
| 179 | 357 | 1070 | 0707 | 31 | P ₃₁ (t-96) | 3456 |
| 180 | 995 | 0501 | 1276 | 32 | P ₃₂ (t-96) | 3405 |
| 181 | 877 | 0455 | 1322 | 33 | P ₃₃ (t-96) | 3420 |
| 182 | 112 | 1566 | 0211 | 34 | P ₃₄ (t-96) | 5432 |
| 183 | 144 | 0215 | 1562 | 35 | P ₃₅ (t-96) | 4437 |
| 184 | 476 | 1003 | 0774 | 36 | P ₃₆ (t-96) | 2035 |
| 185 | 193 | 1454 | 0323 | 37 | P ₃₇ (t-96) | 5234 |

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 6 of 6)

| PRN Signal No. | C/A | | | P | | |
|----------------------|---------------------|------------------------------------|-----------------------------|---------------------|-----------------------------------------|---------------------------|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)** | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Delay (Hours) *** | First 12 Chips (Octal) |
| 186 | 109 | 1665 | 0112 | 1 | P ₁ (t-120) | 5067 |
| 187 | 445 | 0471 | 1306 | 2 | P ₂ (t-120) | 2611 |
| 188 | 291 | 1750 | 0027 | 3 | P ₃ (t-120) | 5126 |
| 189 | 87 | 0307 | 1470 | 4 | P ₄ (t-120) | 4671 |
| 190 | 399 | 0272 | 1505 | 5 | P ₅ (t-120) | 4116 |
| 191 | 292 | 0764 | 1013 | 6 | P ₆ (t-120) | 2265 |
| 192 | 901 | 1422 | 0355 | 7 | P ₇ (t-120) | 5310 |
| 193 | 339 | 1050 | 0727 | 8 | P ₈ (t-120) | 2766 |
| 194 | 208 | 1607 | 0170 | 9 | P ₉ (t-120) | 5151 |
| 195 | 711 | 1747 | 0030 | 10 | P ₁₀ (t-120) | 2646 |
| 196 | 189 | 1305 | 0472 | 11 | P ₁₁ (t-120) | 3101 |
| 197 | 263 | 0540 | 1237 | 12 | P ₁₂ (t-120) | 3662 |
| 198 | 537 | 1363 | 0414 | 13 | P ₁₃ (t-120) | 5513 |
| 199 | 663 | 0727 | 1050 | 14 | P ₁₄ (t-120) | 4467 |
| 200 | 942 | 0147 | 1630 | 15 | P ₁₅ (t-120) | 4011 |
| 201 | 173 | 1206 | 0571 | 16 | P ₁₆ (t-120) | 4226 |
| 202 | 900 | 1045 | 0732 | 17 | P ₁₇ (t-120) | 4331 |
| 203 | 30 | 0476 | 1301 | 18 | P ₁₈ (t-120) | 4376 |
| 204 | 500 | 0604 | 1173 | 19 | P ₁₉ (t-120) | 2355 |
| 205 | 935 | 1757 | 0020 | 20 | P ₂₀ (t-120) | 5344 |
| 206 | 556 | 1330 | 0447 | 21 | P ₂₁ (t-120) | 4740 |
| 207 | 373 | 0663 | 1114 | 22 | P ₂₂ (t-120) | 2142 |
| 208 | 85 | 1436 | 0341 | 23 | P ₂₃ (t-120) | 5243 |
| 209 | 652 | 0753 | 1024 | 24 | P ₂₄ (t-120) | 2703 |
| 210 | 310 | 0731 | 1046 | 25 | P ₂₅ (t-120) | 5163 |

** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)

*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.

6.3.5.3 Additional L2 CM-/L2 CL-Code PRN sequences. The PRN L2 CM-code and L2 CL-code are described in Sections 3.2.1.4 and 3.2.1.5, respectively, and 37 L2 CM-/L2 CL-code sequence pairs are assigned by SV-ID number in Table 3-II. An additional set of 80 L2 CM-/L2 CL-code PRN sequence pairs are selected and assigned with PRN numbers in this section as shown in Table 6-II. Among the 80 additional sequences, PRN numbers 38 through 63 are reserved for future GPS SVs, and PRN numbers 159 through 210 are reserved for other GNSS applications. PRN allocations do not exist for numbers 64 through 158 for L2 CM-/L2 CL-code. Any assignment of a L2 CM-/L2 CL-code PRN number and its code sequence pair for any additional SV and/or other L2 signal applications will be selected from the sequences of Table 6-II and will be approved, controlled, and managed by the GPS JPO.

Table 6-II. Additional L2 CM-/L2 CL-Code Phase Assignments (sheet 1 of 3)

| PRN Signal No. *** | Initial Shift Register State (Octal) | | End Shift Register State (Octal) | |
|--------------------------|--------------------------------------|-----------|----------------------------------|-----------|
| | L2 CM | L2 CL | L2 CM * | L2 CL ** |
| 38 | 771353753 | 101232630 | 453413162 | 463624741 |
| 39 | 226107701 | 132525726 | 637760505 | 673421367 |
| 40 | 022025110 | 315216367 | 612775765 | 703006075 |
| 41 | 402466344 | 377046065 | 136315217 | 746566507 |
| 42 | 752566114 | 655351360 | 264252240 | 444022714 |
| 43 | 702011164 | 435776513 | 113027466 | 136645570 |
| 44 | 041216771 | 744242321 | 774524245 | 645752300 |
| 45 | 047457275 | 024346717 | 161633757 | 656113341 |
| 46 | 266333164 | 562646415 | 603442167 | 015705106 |
| 47 | 713167356 | 731455342 | 213146546 | 002757466 |
| 48 | 060546335 | 723352536 | 721323277 | 100273370 |
| 49 | 355173035 | 000013134 | 207073253 | 304463615 |
| 50 | 617201036 | 011566642 | 130632332 | 054341657 |
| 51 | 157465571 | 475432222 | 606370621 | 333276704 |
| 52 | 767360553 | 463506741 | 330610170 | 750231416 |
| 53 | 023127030 | 617127534 | 744312067 | 541445326 |
| 54 | 431343777 | 026050332 | 154235152 | 316216573 |
| 55 | 747317317 | 733774235 | 525024652 | 007360406 |
| 56 | 045706125 | 751477772 | 535207413 | 112114774 |
| 57 | 002744276 | 417631550 | 655375733 | 042303316 |
| 58 | 060036467 | 052247456 | 316666241 | 353150521 |
| 59 | 217744147 | 560404163 | 525453337 | 044511154 |
| 60 | 603340174 | 417751005 | 114323414 | 244410144 |
| 61 | 326616775 | 004302173 | 755234667 | 562324657 |
| 62 | 063240065 | 715005045 | 526032633 | 027501534 |
| 63 | 111460621 | 001154457 | 602375063 | 521240373 |

* Short cycled period = 10230
** Short cycled period = 767250
*** PRN sequences 38 through 63 are reserved for GPS.

Table 6-II. Additional L2 CM-/L2 CL-Code Phase Assignments (sheet 2 of 3)

| PRN Signal No. | Initial Shift Register State (Octal) | | End Shift Register State (Octal) | |
|----------------------|--------------------------------------|-----------|----------------------------------|-----------|
| | L2 CM | L2 CL | L2 CM * | L2 CL ** |
| 159 | 604055104 | 605253024 | 425373114 | 044547544 |
| 160 | 157065232 | 063314262 | 427153064 | 707116115 |
| 161 | 013305707 | 066073422 | 310366577 | 412264037 |
| 162 | 603552017 | 737276117 | 623710414 | 223755032 |
| 163 | 230461355 | 737243704 | 252761705 | 403114174 |
| 164 | 603653437 | 067557532 | 050174703 | 671505575 |
| 165 | 652346475 | 227354537 | 050301454 | 606261015 |
| 166 | 743107103 | 704765502 | 416652040 | 223023120 |
| 167 | 401521277 | 044746712 | 050301251 | 370035547 |
| 168 | 167335110 | 720535263 | 744136527 | 516101304 |
| 169 | 014013575 | 733541364 | 633772375 | 044115766 |
| 170 | 362051132 | 270060042 | 007131446 | 704125517 |
| 171 | 617753265 | 737176640 | 142007172 | 406332330 |
| 172 | 216363634 | 133776704 | 655543571 | 506446631 |
| 173 | 755561123 | 005645427 | 031272346 | 743702511 |
| 174 | 365304033 | 704321074 | 203260313 | 022623276 |
| 175 | 625025543 | 137740372 | 226613112 | 704221045 |
| 176 | 054420334 | 056375464 | 736560607 | 372577721 |
| 177 | 415473671 | 704374004 | 011741374 | 105175230 |
| 178 | 662364360 | 216320123 | 765056120 | 760701311 |
| 179 | 373446602 | 011322115 | 262725266 | 737141001 |
| 180 | 417564100 | 761050112 | 013051476 | 227627616 |
| 181 | 000526452 | 725304036 | 144541215 | 245154134 |
| 182 | 226631300 | 721320336 | 534125243 | 040015760 |
| 183 | 113752074 | 443462103 | 250001521 | 002154472 |
| 184 | 706134401 | 510466244 | 276000566 | 301767766 |
| 185 | 041352546 | 745522652 | 447447071 | 226475246 |
| 186 | 664630154 | 373417061 | 000202044 | 733673015 |
| 187 | 276524255 | 225526762 | 751430577 | 602507667 |
| 188 | 714720530 | 047614504 | 136741270 | 753362551 |
| 189 | 714051771 | 034730440 | 257252440 | 746265601 |
| 190 | 044526647 | 453073141 | 757666513 | 036253206 |

* Short cycled period = 10230
** Short cycled period = 767250

Table 6-II. Additional L2 CM-/L2 CL-Code Phase Assignments (sheet 3 of 3)

| PRN Signal No. | Initial Shift Register State (Octal) | | End Shift Register State (Octal) | |
|----------------------|--------------------------------------|-----------|----------------------------------|-----------|
| | L2 CM | L2 CL | L2 CM * | L2 CL ** |
| 191 | 207164322 | 533654510 | 606512137 | 202512772 |
| 192 | 262120161 | 377016461 | 734247645 | 701234023 |
| 193 | 204244652 | 235525312 | 415505547 | 722043377 |
| 194 | 202133131 | 507056307 | 705146647 | 240751052 |
| 195 | 714351204 | 221720061 | 006215430 | 375674043 |
| 196 | 657127260 | 520470122 | 371216176 | 166677056 |
| 197 | 130567507 | 603764120 | 645502771 | 123055362 |
| 198 | 670517677 | 145604016 | 455175106 | 707017665 |
| 199 | 607275514 | 051237167 | 127161032 | 437503241 |
| 200 | 045413633 | 033326347 | 470332401 | 275605155 |
| 201 | 212645405 | 534627074 | 252026355 | 376333266 |
| 202 | 613700455 | 645230164 | 113771472 | 467523556 |
| 203 | 706202440 | 000171400 | 754447142 | 144132537 |
| 204 | 705056276 | 022715417 | 627405712 | 451024205 |
| 205 | 020373522 | 135471311 | 325721745 | 722446427 |
| 206 | 746013617 | 137422057 | 056714616 | 412376261 |
| 207 | 132720621 | 714426456 | 706035241 | 441570172 |
| 208 | 434015513 | 640724672 | 173076740 | 063217710 |
| 209 | 566721727 | 501254540 | 145721746 | 110320656 |
| 210 | 140633660 | 513322453 | 465052527 | 113765506 |

* Short cycled period = 10230
** Short cycled period = 767250

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7 Mar 2006**